

# SAE JOURNAL

Published Monthly By The Society of Automotive Engineers, Inc.

W. J. Davidson, President

David Beecroft, Treasurer

John A. C. Warner, Secretary and General Manager

Norman G. Shidle, Executive Editor

Vol. 44

JUNE, 1939

No. 6

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## About Authors

● *D. S. Hersey is a graduate of Massachusetts Institute of Technology; receiving his B.S. in aeronautics in 1929. While working for his degree he spent two years working part time as draftsman for W. H. Schrafft & Sons, candy makers. Then, after graduating, he joined the research division of United Aircraft Corp., as assistant aeronautical engineer on airplane flight test work. While holding this position he collaborated with A. Lewis MacClain, of Pratt & Whitney Aircraft, in preparing the SAE paper, "Commercial Flight Tests Improved by New Equipment and New Methods," published in SAE Transactions, July, 1933, pages 245-255. In 1935 Mr. Hersey was transferred to the Pratt & Whitney Aircraft Division as test engineer, and in 1936 he was assigned to cylinder development, cooling, and airflow problems as project engineer, the position he now holds.*

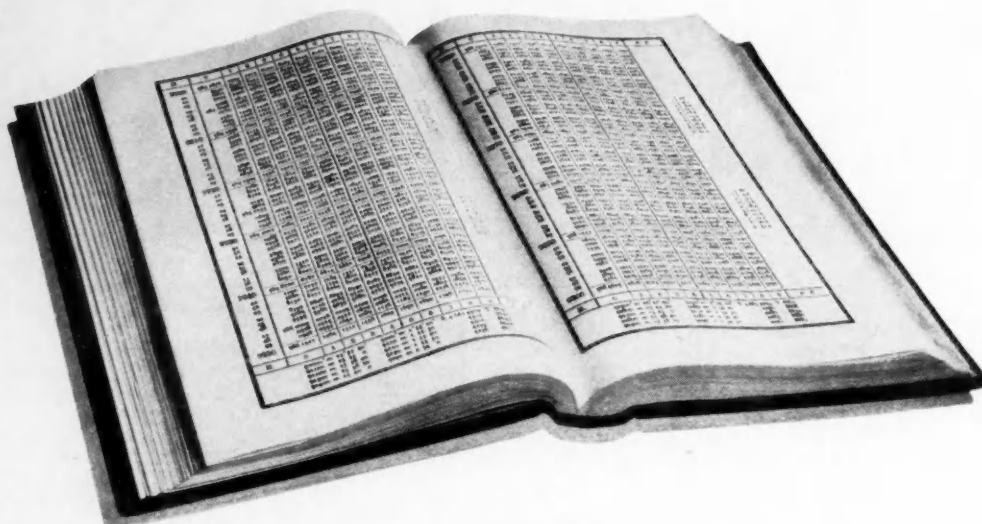
● *W. G. Lundquist (M '29), since 1929, has been in the experimental test department of the Wright Aeronautical Corp.; his work including experimental testing, stress analysis, design, vibration, research, and development work on new models. In 1931 he became associated with the development of the two-row engine as project engineer, and is now project engineer for the double-row Cyclone engine development. He received his B.S. from the University of Minnesota in 1928 and, before joining Wright, was with the Westinghouse Electric & Manufacturing Co. for a short period.*

● *E. A. Roberts (Aff. Rep. '37), in his capacity as passenger-car tire development engineer for the Firestone Tire & Rubber Co., works closely with automobile manufacturers in finding answers to their tire problems. Development of tires for racing cars is another phase of his work. He has been affiliated with the development department of Firestone since shortly after his graduation from Ohio Wesleyan University in 1924.*

● *William B. Stout (LM '14), president of the SAE in 1934, has been active in automotive engineering since 1910. During his early years in the industry he*  
(Concluded on page 13)

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SAE WORLD AUTOMOTIVE ENGINEERING

# Congress Opens

**M**EMBERS and guests from 20 foreign countries and from almost every state in the Union thronged the Hotel Pennsylvania in New York for the opening of the SAE World Automotive Engineering Congress on May 22.

More than 20 speakers from overseas were on hand ready to tell their technical stories at the New York and San Francisco sessions of this great gathering, while leading technicians of the United States and scores of others from abroad made ready to listen and to discuss the new ideas scheduled for development.

This issue of the SAE Journal was just on its way to press as President W. J. Davidson dropped his gavel to declare the meeting open and as the delegates started the series of sessions and events which were to take place in New York, Indianapolis, Detroit, and San Francisco.

Next month a complete technical news story of every session will appear, summarizing each paper and presenting in readable form the highlights of the discussions. This story of the Congress sessions will be only one feature of the great special World Automotive Engineering Congress Issue of the SAE Journal which will constitute the July issue.

A special section dealing with Pacific Coast automotive and Congress activities, unusual pictures of automotive phases of the two world's fairs, a big, well-balanced Transactions Section and other features will be included.

On the two pages immediately following, the Society voices its public appreciation to each of 200 companies which have responded to an invitation from the SAE to participate in support of the Congress to the extent of not over \$50 for any one company.

French Delegation First to Arrive for SAE World Automotive Engineering Congress (see story p. 14)



# An Appreciation

AC Spark Plug Division of G.M.C.

Acheson Colloids Corp.

Acrotorque Co., The

Ahlberg Bearing Co.

Air Cooled Motors Corp.

Allen Electric & Equipment Co.

Aluminum Co. of America

Aluminum Industries, Inc.

American Airlines, Inc.

American Chain & Cable Co., Inc.

American Chemical Paint Co.

American Coach & Body Co.

American Grease Stick Co.

American Oil Co.

American Steel & Wire Co.

American Tube Bending Co.

Associated Spring Corp.

Autocar Co.

B. G. Corp.

Bakelite Corp.

Bantam Bearings Corp.

Barnes Co., Ltd., Wallace

Barnes-Gibson-Raymond Division of Associated  
Spring Corp.

Belden Mfg. Co.

Bellanca Aircraft Corp.

Bendix Aviation Corp.

Bohn Aluminum & Brass Corp.

Borg & Beck Division, Borg-Warner Corp.

Borg-Warner Corp.

Bound Brook Oil-Less Bearing Co.

Briggs Clarifier Co.

Brill Co., J. G.

Brockway Motor Co., Inc.

Brown & Sharpe Mfg. Co.

Bryant Chucking Grinder Co.

Budd Mfg. Co., Edward G.

Burgess Battery Co. (Acoustic Division)

Canada Dry Gingerale, Inc.

Canadian Car & Foundry Co., Ltd.

Caterpillar Tractor Co.

Champion Spark Plug Co.

Chevrolet-Central Office Division of G.M.C.

Chicago Rawhide Mfg. Co.

Chrysler Corp.

Cincinnati Milling Machine & Cincinnati Grinders,  
Inc.

Clark Equipment Co.

Clearing Machine Corp.

Climax Molybdenum Co.

Continental Motors Corp.

Cousins Tractor Co.

Crane Co.

Dart Truck Co.

Deere & Co.

Delco Products Division of G.M.C.

DeLuxe Products Corp.

Detroit Edison Co.

Detroit Gasket & Mfg. Co.

Detroit Steel Products Co.

Dickson Gasket Co.

Diesel Equipment Corp.

Dill Mfg. Co.

Dow Chemical Co.

Dunlop Tire & Rubber Corp.

Eaton Mfg. Co.

Ekstrand & Tholand, Inc.

Elco Grease & Oil Co.

Electric Auto-Lite Co.

Erie Malleable Iron Co.

Ethyl Gasoline Corp.

Ferguson Carburetor Engineering Co.

Firestone Tire & Rubber Co.

Fiske Brothers Refining Co.

Ford Motor Co.

Fuller Mfg. Co.

G & O Mfg. Co.

Gemmer Mfg. Co.

General Motors Corp.

General Motors Truck & Coach Division of Yellow  
Truck & Coach Mfg. Co.

Gillespie & Co., Dean

Globe-Union, Inc.

Goodrich Co., B. F.

Goodyear Tire & Rubber Co.

Gould & Eberhardt

Graham-Paige Motors Corp.

Guide Lamp Division of G.M.C.

Gulf Oil Corp.

Hall-Aluminum Aircraft Corp.

Harris Products Co.

Harrison Radiator Division of G.M.C.

Heintz Mfg. Co.

Hercules Motors Corp.

Houdaille-Hershey Corp.

Hudson Motor Car Co.

Hyatt Bearings Division of G.M.C.

Imperial Brass Mfg. Co.

Indianapolis Motor Speedway Corp.

Industrial Clutch Co.

Inland Mfg. Division of G.M.C.

Inland Steel Co.

International Harvester Co. of America

International Lubricant Corp.

International Nickel Co., Inc.

International Tool Co.

Kendall Refining Co.



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*to* LEADING COMPANIES *Whose Donations Have*  
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★ ★ ★ THE 1939 WORLD AUTOMOTIVE ENGINEERING CONGRESS ★ ★ ★

Landis Tool Co.  
Latex Fiber Industries, Inc.  
Leece-Neville Co.  
Leibing Automotive Devices, Inc.  
Lipe, Inc., W. C.  
Long Mfg. Division of Borg-Warner Corp.  
Lubri-Zol Corp.  
Lycoming Mfg. Co.

Marlin-Rockwell Corp.  
Massey Harris Co., Ltd.  
McCord Radiator & Mfg. Co.  
Mechanics Universal Joint Co.  
Meiser & Co., G. H.  
Merrill Axle-Wheel Service  
Merrill Engineering Laboratories  
Mishawaka Rubber & Woolen Mfg. Co.  
Mitchell & Smith, Inc.  
Monmouth Products Co.  
Motor Improvements, Inc.  
Motor Products Corp.  
Motor Wheel Corp.

Nash-Kelvinator Corp.  
National Carbon Co., Inc.  
New Departure Division of G.M.C.  
Niles-Bement-Pond Co., Pratt & Whitney Division  
Nordberg Mfg. Co.  
Norma-Hoffmann Bearings Corp.  
Northwest Airlines, Inc.  
Norton Co.

Olds Motor Works Division of G.M.C.  
Ozalid Corp.

Packard Motor Car Co.  
Parker Rust Proof Co.  
Perfect Circle Co.  
Pratt & Whitney Aircraft, Division of United Aircraft Corp.  
Prest-O-Lite Storage Battery Co., Ltd.  
Pure Oil Co.

Ranger Engineering Corp.  
Raybestos-Manhattan, Inc.  
Reid Products, Division of Standard Products Co.  
Reynolds Spring Co.  
Richardson Co.  
Richfield Oil Corp. of N. Y.  
Rollway Bearing Co., Inc.  
Ronning Machinery Co.  
Ross Gear & Tool Co.  
Ruth Co.

SKF Industries, Inc.  
Saffold Engineering Laboratories  
Schwitzer-Cummins Co.  
Sealed Power Corp.  
Sessions Foundry Co.  
Shell Oil Co., Inc.  
Shell Union Oil Corp.  
Sinclair Refining Co.  
Smith Corp., A. O.  
Socony-Vacuum Oil Co., Inc.  
Souther Engineering Co., Henry  
Spicer Mfg. Corp.  
Standard Oil Co. of Calif.  
Standard Oil Co. (Indiana)  
Standard Oil Co. (Ohio)  
Standard Oil Development Co.  
Stewart-Warner Corp.  
Studebaker Corp.  
Suburban Fuel Oil Service, Inc.  
Sunnen Products Co.  
Swan-Finch Oil Corp.

Texas Co., The  
Thompson Products, Inc.  
Thurner Heat Treating Co.  
Tide Water Associated Oil Co.  
Timken-Detroit Axle Co.  
Timken Roller Bearing Co.  
Tinnerman Stove & Range Co.  
Titeflex Metal Hose Co.  
Trico Products Corp.  
Trucktor Corp.  
Tsungani Piston Co.  
Tung-Sol Lamp Works, Inc.

Union Oil Co. of Calif.  
United Oil Co., Inc.  
United States Diesel Engineering School  
U. S. Rubber Co.  
Universal Oil Products Co.

Valvoline Oil Co.  
Vortex Mfg. Co.

Wakefield & Co., Ltd., C. C.  
Waltham Watch Co.  
Waukesha Motor Co.  
Weatherhead Co.  
Willard Storage Battery Co.  
Williams & Co., J. H.  
Wisconsin Motor Corp.  
Wright Aeronautical Corp.

Young Spring & Wire Corp., L. A.

# About SAE Members:

SAE Past-President **HARRY T. WOOLSON**, executive engineer, Chrysler Corp., is serving on the Advisory Committee on Engineering to the President's Committee on Civil Service Improvement.

**WILBERT B. McCLUER**, chief chemist, Kendall Refining Co., Bradford, Pa., has been elected to the company's board of directors. Four years ago Mr. McCluer left the staff of Pennsylvania State College's petroleum laboratory to join Kendall.

**RICHARD H. JOHNSON** has been transferred from New York to Boston by the Ingersoll-Rand Co.

**K. K. HOAGG** is now located in Detroit in charge of product information for the General Motors Overseas Operations. He previously was in the New York office.

**WILLIAM L. AIKEN**, formerly transportation engineer, Autocar Co., Ardmore, Pa., has joined the Wright Aeronautical Corp., Paterson, N. J., in the capacity of experimental test engineer.

**THOMAS R. BRADY**, formerly factory manager, American Bantam Motor Car Co., Butler, Pa., has joined the Curtiss Wright Corp., propeller division, Clifton, N. J., as assistant supervisor.

**CLARE M. MacKICHAN**, formerly a student at the University of Michigan, has joined the General Motors Corp., Detroit, as an apprentice.

**F. C. CRAWFORD**, president, Thompson Products, Inc., Cleveland, has been elected president of the Cleveland Chamber of Commerce.

**HENRY C. KUEHN** recently joined the Isaacson Iron Works, Portland, Ore., as draftsman.

When the Chance Vought and Sikorsky Aircraft Divisions of United Aircraft Corp. recently were combined to form the Vought-Sikorsky Aircraft Division of the organization, **C. J. McCARTHY** was named assistant general manager of the new unit; **IGOR I. SIKORSKY**, engineering manager; **REX BEISEL**, chief engineer; and **M. E. GLUHAREFF**, chief of design and aerodynamics.

**A. R. SPICACCI** has been transferred from the Los Angeles office of the New Departure Division of General Motors Corp., to the Bristol, Conn., office of the New Departure Division of the GM Sales Corp.

**RALPH K. SUPER**, who has been chief engineer of the Linderman Devices, Inc., Newburgh,



R. K. Super  
To Timken-Detroit

N. Y., since 1936, has joined the engineering staff of the Timken-Detroit Axle Co., Canton, Ohio, as a specialist in brake design.

**JOHN G. LEE**, who has been with the Vought Division of United Aircraft Corp. for 7 years, is now aeronautical engineer in the Research Division of the organization, East Hartford, Conn.

Many SAE members were among the airplane designers and manufacturers, guests of the National Advisory Committee for Aeronautics, welcomed by **DR. GEORGE W. LEWIS**, NACA director of aeronautical research, at Langley Field, May 2. The visitors spent the entire day inspecting the \$7,500,000 plant and were present at the dedication of two new wind tunnels, one a 60-ft pressure cylinder and the other a "free-flight" spheroid.

**WILLIAM HOWARD McCOY**, formerly with the Research Laboratories Division of General



W. H. McCoy  
Makes Change

Motors Corp., Detroit, is now affiliated with the Allison Engineering Division, Indianapolis, Ind.

**PAUL W. LITCHFIELD**, president of Goodyear Tire & Rubber Co., sailed from New York on May 3 to attend a meeting in London of the International Rubber Regulations Committee. He also will participate in the opening of a new Goodyear factory at Norrping, Sweden, which will employ 500 workers.

**ELMER BRYANT**, heretofore manager of the gage department, Greenfield Tap & Die Corp., Greenfield, Mass., has been named western district sales manager of the company.

**LT.-COM. DAVID WARD HARRIGAN**, United States Navy, has been transferred from Norfolk, Va., to the Fleet Air Department, San Diego, Calif.

**R. M. BUSSY**, who has been superintendent of transportation, Kirmanshah Petroleum Co., Ltd., Kirmanshah, North Iran, has joined the Anglo-Iranian Oil Co., Ltd., and will be located at Masjid-i-Sulaiman, South Iran.

**DR. ZAY JEFFRIES**, technical director, incandescent lamp department, General Electric Co., was elected to the National Academy of Science at their annual spring meeting held during the last week of April.

**CHARLES J. MANNEY** has been named chief engineer of Bickle-Seagrave Ltd., Woodstock, Ontario, Canada, manufacturers of motor fire equipment. Before this appointment he was mechanical engineer, design, Seagrave Corp., Columbus, Ohio.

**T. W. HALLERBERG**, formerly chief engineer, air cleaner division, United Specialties Co., Chicago, is affiliated with the Novi Equipment Co., Novi, Mich.

**B. H. ANIBAL**, Pontiac chief engineer, heads a department of 217 employees whose average length of service is 9.86 years per man.

**COL. EDGAR S. GORRELL**, president, Air Transport Association of America, stated that through lack of properly coordinated research in aviation, this country in 1938 relinquished leadership in military aeronautics to at least one and perhaps to two or more European nations, when addressing the semi-annual meeting of the National Petroleum Association at Cleveland, April 14.

**G. BOGART BLAKELEY** has been named manager, direct consumer sales, U. S. Steel Prod-



## For Washing Insulators

SAE members **ELLIS W. TEMPLIN** and **R. E. ROWLEY**, of the Los Angeles Department of Water & Power, contributed to the design of the department's new insulator-washing truck, shown above.

An outstanding feature of the new unit is a 72-ft extension ladder which operates through an arc of 350 deg. At the top of the ladder is a bucket which seats the hoseman who washes the insulators.

The pumps can force water under 1000 lb per sq in. pressure through a specially constructed hose at the rate of 37 gpm from a 900-gal tank mounted on the truck, so that the unit can double as a full-fledged piece of fire-fighting equipment.

ucts Co., New York. Before the change he was manager, New York export office, The White Motor Co.

**J. W. CONWELL**, junior engineer with the Tide Water Associated Oil Co., has been transferred from the company's Drumright, Okla., refinery to Bayonne, N. J.

**FRANK P. LAWLER** has joined the Buckeye Traction Ditcher Co., Chicago, as tractor equipment engineer.

**E. F. GRIEP**, research engineer, Standard Oil Co. of Calif., has been transferred from Richmond, Calif., to New York City.

Recently **F. W. MARSCHNER** celebrated the completion of 25 years with the New Departure Division of General Motors, with which he is western sales manager.

**JAMES C. WINSLOW** is with the El Segundo division of Douglas Aircraft Co., El Segundo, Calif. Previously he was engineer with the Boeing Aircraft Co., Seattle, Wash.

**REID RAILTON**, British engineer and designer of the first motor vehicle to exceed a speed of 350 mph on land, is in the United States making preliminary arrangements for an attempt at Bonneville Salt Flats, Utah, to shatter the present record, probably in August. It is expected that John Cobb, English sportsman, will be at the wheel of the Railton-designed racer.

## Changes at General Motors



C. E. Wilson

**WILLIAM S. KNUDSEN**, president of General Motors Corp., has been named chairman of the company's administration committee, a post formerly held by **ALFRED P. SLOAN, JR.**, chairman of the board and of the policy committee. **C. E. WILSON**, a vice-president, has been appointed executive vice-president and vice-chairman of the administration board. **B. D. KUNKLE**, director of manufacturing for the corporation, has been named a vice-president and a member of the administration committee.

**HERBERT CLARK** is deputy controller at the Castle Bromwich Aeroplane Factory, Birmingham, England.



Herbert Clark  
New Position

**DANIEL H. KELLY**, executive vice-president, Electric Auto-Lite Co., heads a special committee to arrange the annual dinner meeting of the Toledo Chamber of Commerce.

**E. W. WINEGARD**, formerly general manager of the Rex-Watson Corp., Canastota, N. Y., has been named assistant sales manager of the Superior Body Co., Lima, Ohio.

**HOLLISTER MOORE**, assistant editor of the SAE Journal, recently was elected secretary-treasurer of the New York Business Paper Editors.

**CHARLES W. PENRY**, who has been in the test department of General Electric Co., Schenectady, N. Y., recently joined the maintenance department of Braniff Airways, Inc., Love Field, Dallas, Texas.

Since May 1, **HUMPHREY F. PARKER** has been development engineer with Columbus-McKinnon Chain Corp., Tonawanda, N. Y.

**SAMUEL NOOGER** has joined the Postal Telegraph Co., New York, as junior engineer. He previously was a student at New York University.

**DAVID C. SPAULDING, JR.**, formerly with the Standard Oil Co. of Ohio, is with the Bunting Brass & Bronze Co., Toledo, as sales engineer.

**CARL F. ROTTMUELLER** is designer with the Acrotorque Drive & Power Co., Cleveland.

## J. Albert Roesch, Jr.

**J. Albert Roesch, Jr.**, president of the Steel Sales Co., Chicago, for the past 15 years, died of a heart attack April 27 at Pittsburgh, where he had gone to attend a business conference. He was 57 years old.

Mr. Roesch entered the steel and metal business in 1907, and organized the Steel Sales Co. in 1915. Besides being president of that concern he was a director of the Copperweld Sales Corp., Glassport, Pa., and a director of the Mercantile Trust & Savings Bank of Chicago. He became an associate member of the Society in 1930.

## Clifford L. Snyder

**Clifford L. Snyder**, who became a member of the Society in 1934, died May 2, at the age of 47. He was sales engineer with the L. A. Young Spring & Wire Corp., Detroit, and had been affiliated with that organization since 1932. Earlier he had been experimental engineer with the Evans Products Co., and the Detroit Testing Laboratory.

After graduating from the University of Michigan, Mr. Snyder served from 1917 to 1919 as second lieutenant in the nitrate division, Ordnance Department, United States Army.

**C. C. CARLTON**, vice-president and secretary, Motor Wheel Corp., Lansing, Mich., has been reelected president of the Automotive Parts & Equipment Manufacturers, Inc. **HUGH H. C. WEED**, vice-president and general manager, Carter Carburetor Corp., St. Louis, Mo., was elected vice-president, and **B. F. HOPKINS**, president, Cleveland Graphite Bronze Co., Cleveland, secretary. In addition to the above officers, SAE members serving on the board of directors include **CHARLES GETLER**, president, Houdaille-Hershey Corp., Detroit; **C. E. WILSON**, executive vice-president, General Motors Corp., Detroit; and **DANIEL H. KELLY**, executive vice-president, Electric Auto-Lite Co., Toledo.

## About Authors

(Concluded from page 7)

was chief engineer of the Shurmeir Motor Car Co.; designed the Imp Cycle Car; and was chief engineer of Scripps-Booth. He was consulting engineer to the aircraft department of the Packard Motor Car Co. in 1916, and chief engineer in 1917. He served as technical adviser to the War Aircraft Board in 1919, and the following year was consulting engineer for the United Aircraft Engineering Corp. Since 1921, at different times, he has been president, Stout Metal Airplane Co.; vice-president, Stout Air Service, Inc., the first regular passenger airline; and president, Stout Engineering laboratories, Inc., his present position. Mr. Stout built the first all-metal airplane in America and the first thick-wing plane. He developed streamline railcars for Pullman, rear-engine buses for the Gar Wood Co., the Scarab automobile, and "suitcase houses" for minimum housing.

• **Fred E. Weick (M '29)** took his present position as chief engineer, Engineering & Research Corp., early in 1937. Prior to that he was long with the National Advisory Committee for Aero-

nautics. There he conducted the first full-scale wind-tunnel research on aircraft propellers and did research on drag and cooling of radial air-cooled engines culminating in the design and development of the NACA cowling. Working with other NACA engineers he designed experimental airplanes used by the United States Department of Commerce as a part of its development program on airplanes for private use. He has been active in aircraft engineering since receiving his B.S. from the University of Illinois in 1922. Mr. Weick was SAE vice-president representing the Aircraft Engineering Activity in 1937, and in 1936 was chairman of the Wright Brothers Medal Board of Award.

• **Austin M. Wolf (M '11)** has been a member of the Society since 1911. Active in its work, he has twice been chairman of the Metropolitan Section and has served as a member of the SAE Council. In addition to carrying on a general consulting practice, Mr. Wolf is automotive consultant and director of standards for New York State.



# News of the Society

## Aircraft Experts Scan International Standards

American and European aeronautical experts, in New York to attend the SAE World Automotive Engineering Congress, met May 15-17 under the auspices of the American Standards Association to discuss international standards for aircraft and aircraft-engine parts, and aircraft fuels.

Arthur Nutt, vice-president in charge of engineering, Wright Aeronautical Corp., is chairman of the American industry committee which is carrying out its work under the technical leadership of the Society of Automotive Engineers.

In welcoming the group Edmund A. Prentis, president of the American Standards Association, and John A. C. Warner, secretary and general manager of the SAE, both pointed out the practical need for standards of size and fit for airplane parts which had led the American aeronautical industry to a decision to participate in international work in this field.

"As sponsor for the American phases of this aeronautical standardization project," said Mr. Warner, "the Society of Automotive Engineers sees a chance to produce results of an importance even greater than that which has accrued from its 20 years of steady work in the field of aeronautic standards."

The International Standards Association has for some time had a committee on aeronautics on which most of the European countries are represented. Now, following the recommendations of a conference of the American aeronautical industry, held last February, the American Standards Association has arranged for American participation in this international work. An American committee, under technical leadership of the SAE, is already studying the findings of the ISA committee and putting forward suggestions on behalf of American industry.

The following national organizations are taking part in the American phases of the work: Aeronautical Chamber of Commerce of America, Air Transport Association of America, American Petroleum Institute, American Society for Testing Materials, Civil Aeronautics Authority, Cooperative Fuel Research, National Advisory Committee on Aeronautics, Society of Automotive Engineers, U. S. Army, and U. S. Navy.

Present at the first meeting were: Arthur Nutt, *Chairman*, Wright Aeronautical Corp.; P. G. Agnew, American Standards Association; C. F. Bona, Fiat Co., Italy; J. W. Broughton, National Research Council, Canada; Gilbert K. Brower, American Airlines, Inc.; R. S. Burnett, Society of Automotive Engineers; Gustaf Carvelli, Wright Aeronautical Corp.; John W. Dunn, Curtiss-Wright Corp.; Robert E. Ellis, American Petroleum Institute; John Gaillard, American Standards Association; H. W. Gooding, Society of British Aircraft Constructors, England; Th. J. Jervis, Isotta Fraschini Co., Milan, Italy; M. S. Kuhring, National Research Council, Ottawa, Canada; Frank Nixon, Bristol Aeroplane Co.,

London, England; Edmund A. Prentis, American Standards Association; John B. Sanborn, Pratt & Whitney Aircraft; C. B. Veal, American Society for Testing Materials; John A. C. Warner, Society of Automotive Engineers; and T. P. Wright, Curtiss-Wright Corp.

## Noise Meter Fails In Judging Debate

• St. Louis

Rear-engine mounting is superior to front-engine mounting for passenger automobiles—according to the result of a debate between the University of Missouri and Washington University, held April 21 when the St. Louis Section met on the campus of the latter school. Two-man teams represented each university. Section Chairman Adam Ebinger presided.

The Missouri team, consisting of George Weise and Irvin Trowbridge, defended the affirmative side of the question, and emphasized the advantages accruing from better streamlining, greater visibility, and improved riding qualities. Clinton Hollocher and John Agnitch of Washington University, in defending the front engine position, pointed out the difficulty of transmitting power flexibly in the short space available with rear-engine mounting, the difficulty of cooling a rear engine, loss of front wheel traction for steering, and the danger of the engine piling up in a head on crash, this latter point being demonstrated by means of small models.

Applause registering 53 decibels for each team forced the judges to discard the noise meter and to resort to a written ballot before they named Missouri as the winning team. Mr. Weise was voted the best speaker on the winning side and was awarded the first prize. Mr. Trowbridge automatically won the second prize.

Following the debate the Aluminum Co. of America showed the picture, "Aluminum from Mine to Metal."

## Tells How to Rear An Infant Industry

• Canadian

"Care, Feeding and Rearing of an Infant Industry," was the title of Dr. Ralph L. Lee's highly interesting and diverting paper before the annual Oshawa meeting of the Canadian Section, May 12. Starting with the conception of the idea behind an industry, Dr. Lee, who is in the public relations department of General Motors, traced the industry through the trials and tribulations of organization, financing, production, merchandising, advertising, and research. Burlesque and good-humored satire lent emphasis to his appraisal of the factors involved in the development of an industry and the economic value of such a development to society.

The meeting was preceded by a reception,

## Field Editors

Baltimore—N. L. Dods  
Buffalo—C. W. Georgi  
Canadian—Warren B. Hastings  
Chicago—Austin W. Stromberg  
Cleveland—W. A. Maynard  
Dayton—R. H. Henry  
Detroit—William F. Sherman  
Indiana—Harlow Hyde  
Kansas City—No Appointment  
Metropolitan—Grosvenor Hotchkiss  
Milwaukee—L. M. Kanters  
New England—J. T. Sullivan  
No. California—R. W. Goodale  
Northwest—R. J. Hutchinson  
Oregon—Sid Hammond  
Philadelphia—H. E. Blank, Jr.  
Pittsburgh—Murray Fahnstock  
St. Louis—A. R. Burgess  
So. California—W. A. F. Millinger  
So. New England—Edwin S. Sessions  
Syracuse—C. T. Doman  
Washington—P. R. Wheeler

with General Motors of Canada, Ltd., as hosts. C. E. McTavish of that company welcomed the Canadian Section members to Oshawa at the dinner.

In the afternoon many of the members participated in a golf tournament at the Oshawa Golf Club.

*Retiring Chairman C. E. Tilston was presented with a gold wrist watch, suitably inscribed, as a token of appreciation of his services to the Section and the Society during his year of office.*

## French Delegation First To Arrive for Congress

On May 10 the Ile de France brought 12 French automotive engineers to America, the first foreign delegation to arrive for the SAE World Automotive Engineering Congress. Accompanying the group was Mme. Jean Paul Levi, the wife of one of the party.

The delegation was met at Quarantine by Leslie Peat, chairman of the Society's Congress Reception Committee; Henry L. Brownback, consulting engineer, who was active in making arrangements for the group; John A. C. Warner, secretary and general manager of the Society; and C. B. Whittelsey, Jr., assistant secretary of the Society in charge of arrangements for the Congress.

Arriving early the French group visited some of the foremost automotive centers in the United States before returning to New York to take part in the opening sessions of the Congress.

Members of the delegation, pictured on page 9, are: Major Henri Petit, president, SIA, editor, "La Technique Automobile," and consulting engineer; Charles B. Brull, vice-president, SIA, member of SAE, former director of Citroën laboratories, and president and general manager, Society for Improvements of Internal Combustion (SPAME); Maurice P. Berger, vice-president, SIA, member of SAE and the British Institution of Automobile Engineers, and manager of the French Automobile Bureau of Standards, professor at the National School of Motors;



André A. Jouve, vice-president, SIA, one-time vice-president, British Section, Society of Civil Engineers, and head of several technical committees of the SIA and automotive manufacturing groups; Xavier V. Morand, honorary treasurer, SIA, president of the Society's publication committee, and managing director, Westinghouse Automobile Brake Co. (France); Antoine K. Spitzer, formerly department manager, Citroën, representing several French companies; Pierre L. Morian, Dunlop branch manager; Charles M. Salusse, technical manager, Société Nationale de Construction de Moteurs, the Government's vehicle, aircraft and engine-building monopoly; Jean M. Brocheriou, manager, Société Nouvelle des Huiles Minérales, fuels and lubricants distributor; Marcel E. Salzmann, supervisor of motor vehicles for a group of French transportation companies; Jean M. Cotal, director, Société d'Application des Brevets Cotal, and inventor of the electro-mechanical epicyclic gear-box; Mme. J. Paul Levi, a member of SIA, and daughter of Charles B. Blum, manufacturer of Latil commercial trucks, and president, Commercial Vehicles Union; J. Paul Levi, general secretary, Automobile Latil.

## 1500% Gain in Safety Since 1928 Reported by Commercial Airlines

**T**AKING off smoothly on a thrilling and vivid sweep through 10 years of startling aviation progress, about 150 Chicago Section members and guests soared to new heights of aviation appreciation on May 12 at the Section's Annual Aeronautics Meeting at the U. S. Army Hangar, Chicago Municipal Airport.

The afternoon stage of the 6-hr ground-flight was a group inspection of airline research and maintenance facilities of American Airlines and the United Air Lines. Top-flight aviation operatives directed the educational flight at the banquet table on the hangar floor.

Directing the flight was Technical Chairman William Littlewood, vice-president of engineering, American Airlines, ably assisted by several airline administrative aides.

Top-flight speaker was Ralph S. Damon, vice-president of operations, American Airlines. He told of a decade of tremendous aviation gains, picturing operation of 18 airlines, flying planes aggregating over 200,000 flight-miles daily, carrying 4000 passengers each day, transporting 20,000 airmail and over 10,000 air-express ton-miles per day, with 80 large planes on major intercity flights every 24 hr.

Citing that the average passenger flight is 400 miles, speaker Damon told how the trend in fares has gone down from about 10¢ per mile to just over 5¢ per mile. Mirroring the tremendous strides in safety, he pointed out that in 1928 only 889,000 miles were flown per accident, as against 13,900,000 flight miles per accident in 1939, a 1500% gain in safety. His own company, he said, operates over airways 6700 miles in length, serving 57 cities in 22 states. Flying 60,000 miles daily, is a fleet of 53 transport planes, 45 of which are in the air daily, eight being held in reserve for research or maintenance duty. Five o'clock in the evening, he said, is the peak hour of service, when 40 American Airlines planes are in flight.

The company's 53 ships, average daily flight for which is 1300 miles, he declared, represented an investment of about \$6,000,000; yet the cost per seat on a 21-passenger plane is on a par with the cost per seat on the modern streamlined railcar with power unit, approximately \$5,000.

Developer of the Condor sleeper plane, Mr. Damon stressed this phase of American Airline operations, declaring that the line has carried in the past more than 124,000 sleeper passengers. To man this transcontinental airline service, he

## Demonstrates Effect of Turbulence on Combustion

### ● So. California

When the Southern California Section met May 10, J. B. Fisher, vice-president, Waukesha Motor Co., compared the fuel and lubrication requirements of gasoline, compression-ignition, and spark-ignition oil engines. His paper, similar to the one he presented at the SAE Annual Meeting (summarized on page 35 of the February, SAE Journal), created considerable discussion.

To illustrate his point that turbulence speeds up and intensifies combustion in an engine, Mr. Fisher operated a special demonstration unit that confirmed his claim in a spectacular fashion.

It was brought out in discussion that the spark-ignition oil engine can use gasoline or gas as well as oil fuels in case of emergency. If gasoline is used, Mr. Fisher recommended that some oil for lubrication of the injector should be added.

The speaker was introduced by Dr. Ulric B. Bray of the Union Oil Co.

planes of 50 to 100 passenger capacity for transcontinental and oceanic service.

A novelty educational feature was Skipper Littlewood's "Professor Quiz" interview with three flight pilots and two stewardesses, who responded to questions as follows:

(1) "What are the Qualifications for a Good Transport Pilot?"—answered by Capt. M. G. Beard, American Airlines; (2) "What are the Qualifications for a Good Airline Stewardess?"—told by Miss Elvira Lane, American Airlines; (3) "What are the Pilot's Duties During a Typical Scheduled Airline Trip?"—reported by Capt. Ed Stewart, United Air Lines; (4) "What are the Stewardess' Duties During a Typical Scheduled Airline Trip?"—related by Miss Alice Severance of the United Air Lines; (5) "What Might the Airlines and Their Pilots Do in Time of War?"—responded to by First Officer Ray Nolan, Transcontinental & Western Air Lines.

The importance of airline engineering and its research contributions was voiced by R. D. Kelly, superintendent of engineering research, United Air Lines Transport Corp. He cited advances in two-way radio, particularly radio's part in effecting instrument landings which will soon be in use.

Development of anti-icing equipment and non-icing carburetors, Mr. Kelly pointed out, have contributed notably to safer winter flying. Likewise improvement in powerplants and the feathering type of propeller have added materially to improved airline operation, he declared. Modern methods of analyzing vibration have been frequently used to improve safety and reliability, he explained, citing the fact that it is now possible to anticipate and correct, and thereby forestall a large proportion of fatigue failures. Heating and ventilating problems, he said, are being solved, through research, particularly use of oxygen equipment for high altitude flying. This equipment has been installed in a great many of the transport planes today and is receiving favorable recognition by pilots, stewardesses and passengers on present schedules which are flown at moderate altitudes.

Flight analyzers or barographs now in use on some airlines, the speaker said, have proven of value and are definite proof for the pilot that he has flown the trip as scheduled. Such routing recorded information can assist materially in the development of better operating methods and equipment, Mr. Kelly pointed out, declaring, "the value of engineering and research will

### ● Chicago

said, requires a working force of 2400; embracing 250 pilots, 125 stewardesses, 700 mechanics and cleaners, 150 radio operators and technicians, 500 station and ticket employees, 50 flight superintendents, with the remainder represented by an extensive sales and development personnel. The communications system alone, he said, transmits 150,000 messages monthly in carrying on its scheduled operations; a system which includes what is declared to be the longest private teletype system in the United States.

Crystal gazing, Mr. Damon forecast perfection of instrument landings in the near future, with faster speeds on long distance planes equipped with pressure cabins. Standardization of equipment, he envisioned as divided into three classifications: (1) feeder planes of 15 passenger capacity for short hops; (2) utility planes of 20 to 30 passenger capacity for flights of 200 to 1000 miles; and (3) long distance non-stop

## Inspect Terminal Maintenance Facilities



More than 100 Chicago Section members and guests inspected shops of the United and American airlines, May 12, prior to the Section's annual aircraft meeting. (Frank P. Bennett Photography)

be still more important in the future. Many of the most important developments are only in their primary stages. Continued maintenance of airline engineering staffs should be encouraged in every way possible."

## Student Tells of Life Aboard Airplane Carrier

### ● Ohio State

A talk on maintenance of airplanes aboard the U.S.S. Saratoga, moving pictures illustrating the application of sound proofing and the use of cotton products in manufacturing a Chevrolet car, a talk on fire prevention, and a steak roast, were the varied programs offered at the four April meetings of the SAE Student Branch at Ohio State University. T. A. Seddon, chairman for the spring quarter, introduced the speakers.

Harry Steele, an SAE student member who addressed the April 10 meeting, told of his ex-

perience in the United States Navy while aboard the U.S.S. Saratoga, an airplane carrier. He discussed the storage of the planes and of gasoline, the landing of a plane on a ship at sea, maintenance of the planes, and some of the daily dangers encountered by the pilots, mechanics and seamen.

Rifle and pistol matches featured the steak roast on April 15.

The SAE Student Branch took charge of the joint meetings of the SAE and ASME student groups on April 22 and 29. The moving pictures, loaned by Chevrolet, were shown at the first of these meetings. At the latter T. Alfred Flemming, former state fire marshal of Ohio and now a member of the National Board of Fire Underwriters, stressed the importance of proper building codes to reduce fire hazards. Fires in homes, he said, caused the death of 62% of the 11,000 people who lost their lives as the result of fire in 1938.

## Research Findings Hint Loopholes In Commonly Accepted Theories

LITTLE consideration was shown for some generally accepted ideas at the Kansas City Section's March 24 meeting. Contrary to almost everyone's belief, said one speaker, tests have shown that drained oil having the most sediment leaves the cleanest engine with the least wear, and the oil that drains clean does so because the dirt was left in the motor. It was declared, in another paper, that although lubricating oil probably does not wear out, it certainly does become contaminated and changed chemically. Another author stressed the importance of piston-ring materials, claiming that this phase of the product has too long been relegated to the background.

Discussers, catching up the baton of frankness, likened the modern engine, under certain conditions, to a lacquer factory; advocated draining oil on a time rather than mileage basis; and warned that when carbon removers are used there is a chance that they will carry carbon from a place where it does no harm to the ring groove where it will play hob.

Starting this active two-session meeting was the joint paper, "Engine Deposits—Causes and Effects," of Dr. W. A. Gruse and C. J. Livingstone, read by the latter, which included the statement that oil does become contaminated and chemically changed even though it probably does not wear out. These two men of the Mellon Institute of Industrial Research, University of Pittsburgh, pointed out that both extreme low temperature and high temperature operations necessitate more frequent oil changing than do operations in the intermediate temperature range. The authors maintain that draining the crankcase oil from a hot engine is probably the most effective way of removing both solid and dissolved lubricating oil contamination, and frequent drainage may be considered as good insurance against maintenance charges which follow crankcase deposits. This is especially true, they said in the case of deposits arising from soluble oxidation products in the oil. They warned purchasers of late-model engines that attempts to extend drain periods may result in repair bills and inconveniences which are all out of proportion to the small amount of money saved by such practices.

### Time Basis Urged for Oil Change

Discussion called for by Session Chairman Earle W. Pughe, Chevrolet-Kansas City Division, General Motors Corp., was to the point. It suggested that the best way to flush a crankcase is to change oil frequently enough to keep it clean—and to drain on a time basis rather than a mileage basis because the engines that run least need draining just about as often as those that run farther.

### ● Kansas City

Regarding carbon removers a warning was sounded that there is the possibility of removing carbon from a place where it is doing no harm to the ring groove where it will do some real harm.

One discussor pointed out that control of oil temperatures is undoubtedly one of the best steps that can be taken in solving the lacquer problem. Today, he said, our clearances are less than they used to be and we are using a very thin oil film. When this thin film of oil is exposed to iron at a very high temperature, "the result is literally a young varnish factory," he declared.

B. A. Yates, chief metallurgist, McQuay-Norris Mfg. Co., the second speaker, in reading his paper on "Recent Developments in Piston-Ring Materials" revealed test results indicating that superficial coatings of piston rings reduce wear from scuffing and erosion, and that a very thin coating of tin is more effective than other types of metallic and non-metallic coatings. Mr. Yates' complete paper is published in the Transactions Section of the SAE Journal for February, 1939, pages 49—58.

Answering a question as to the use of copper for this purpose, Mr. Yates replied that in the tests copper-plated rings gave very satisfactory results at high temperatures.

The evening session was called to order by its chairman, Robert J. Collins, Kansas City Power & Light Co., following an informal dinner at which SAE activities and the World Congress were discussed by E. F. Lowe, assistant general manager of the Society.

"A Study of Lubricating Problems in Rear-Mounted Engines," a paper jointly prepared by Adam Ebinger, superintendent of garages, St. Louis Public Service Co., and A. L. Heintze, staff engineer, research development and application, Sinclair Refining Co., was presented by Mr. Heintze.

The paper covered a two and one-half year investigation of bus-engine lubricating problems, during which 16 distinct types of oil were given life-size service tests. A sudden increase in the amounts of engine deposits found in rear-mounted engines of the buses of the St. Louis Public Service Co. during the summer of 1936, stimulated this study.

After describing the methods followed and indicating the types of oils studied, the authors listed the following conclusions:

1. The wear of a motor is definitely related to oil type and to the oil's process of refining. In bus service, at least, the solvent refined oil gives higher wear than conventionally refined oils.

2. Conventional laboratory tests of oils are no measure for expected motor wear or for the rate of sludge deposition.

3. With oils of the paraffin series, regardless of refining process, that oil which drains the cleanest leaves the most dirt in the motor, and vice versa.

4. Viscosity index gives no indication of the oil's ultimate performance; in fact the findings rate the various oils in reverse ascending order, if viscosity index alone is considered.

5. Flushing under a fixed procedure and at regular intervals with a hot naphthenic pale oil of low viscosity will pay dividends.

6. Piston-ring and motor life can be extended 25% or more by the use of a well-designed run-in oil for at least 5 hr after the motor is assembled.

7. For a given type and kind of oil, the greater stability is had in the higher viscosities.

8. Over-refining of an oil changes the nature of the deposit left in the motor and the more the refining the more "unhandleable" the deposits become for the motor.

9. Ventilation of any motor, when properly designed and applied, can accomplish much in the matter of reducing engine deposits and motor wear.

10. The ventilation of a motor can be accomplished without materially affecting the oil consumption of the engine.

When asked in discussion if the volatility of the oils had been checked, Mr. Heintze replied that it had not been, but that they had speeded up the rate of airflow through the crankcase and therefore believe the volatility of the oil had little effect on the test data. Answering another discussor, Mr. Heintze said that he knows of no solvents for sludges that will work under all conditions.

Discussion of the three papers was participated in by Mr. Pughe, C. A. Shepard, Inter-State Oil Co.; B. E. Sibley, Continental Oil Co.; C. M. Larson, Sinclair Refining Co.; R. G. Hall, General Motors Sales Corp.; Mr. Collins, and others.

## Rubber for Suspension Seen Gaining Headway

### ● Detroit

The application of rubber to the suspension of vehicles has progressed to the point where it has attractive potentialities for large scale production. A. S. Krotz, development engineer, B. F. Goodrich Co., said before the May 1 meeting of the Detroit Section. He described his paper as an attempt to bridge the gap between the technical rubber man and the automotive engineer on the problem of applying rubber to the suspension systems of motor vehicles.

As a typical example he described the "Torsilastic" spring, which is a torsion type spring having the inner shaft surrounded by an annular layer of rubber, and a metal shell around the outside. The rubber is bonded to both shaft and shell. The spring is stressed in torsion, he explained, by anchoring either the shaft or the outside shell to the chassis and rotating the other member.

"Such a spring can be made into a small, light unit that is cheap and without objectionable characteristics," Mr. Krotz declared. "Since it is possible to show distinct advantages over a comparable steel spring, in many applications, the price consideration becomes less important; however, the influence of price should not be underemphasized. While the spring itself costs slightly more than a steel spring, comparisons of cost can be made only on the basis of complete suspension assembly."

The application of such a spring in five different types of suspension was outlined and shown diagrammatically.

The speaker discounted the possibility of using rubber suspension devices without shock absorbers. "For large strokes the damping effect of hysteresis becomes noticeable, but for short

(Concluded on page 19)

# New Members Qualified

These applicants who have qualified for admission to the Society have been welcomed into membership between April 15, 1939, and May 15, 1939.

The various grades of membership are indicated by: (M) Member; (A) Associate Member; (J) Junior; (Aff.) Affiliate Member; (SM) Service Member; (FM) Foreign Member.

## Baltimore Section

DUGUID, H. ALAN (J) engineer, power plant group, Glenn L. Martin Co., Baltimore (mail) 2512 Taylor Ave., Parkville, Md.

## Canadian Section

BEATTIE, FREDERICK J. (A) sales manager, Wallace Barnes Co., Ltd., 274 Sherman Ave., N. Hamilton, Ont.

ELLIS, A. STANLEY (A) general service manager, Ford Motor Co. of Canada, Ltd., Windsor, Ont.

HORN, J. M. (M) field engineer, tractors, Massey-Harris Co., Ltd., 915 King St., W., Toronto, Ont. (mail) 1621 Queen St., W.

## Chicago Section

ALVEN, ALFONS (M) Chicago district manager, Bearings Co. of America, Lancaster, Pa. (mail) 205 W. Wacker Drive, Chicago.

CARLSON, NORMAN E. (J) automotive engineer, Swift & Co., U. S. Yards, Chicago (mail) 7245 Constance Ave.

DAWSON, IVAN RICHARD (M) sales engineer, Aluminum Co. of America, 520 N. Michigan Ave., Chicago.

ERICKSON, GILBERT (J) engine tester, engineering department, International Harvester Co., Tractor Works, 2600 W. 31st Blvd., Chicago (mail) 3617 N. Nottingham Ave.

KIKEN, R. A. (A) vice-president and general manager, Motive Parts Co. of America, Inc., 2419 Indiana Ave., Chicago.

## Cleveland Section

CORNELL, MEAD (A) president, Cornell Machine Co., 5005 Euclid Ave., Cleveland.

GILLET, HARRY, JR. (A) manager, Sales Engrg. Dept., Standard Oil Co. (Ohio), 1641 Midland Bldg., Cleveland.

MAU, STUART LEHMAN (J) Osborn Mfg. Co., Johns Conveyor Division, 5401 Hamilton, Cleveland (mail) 18408 Winslow Rd., Shaker Heights, O.

PARMELEE, GEORGE VENABLE (M) instructor, mechanical engineering, Fenn College, Euclid Ave. & E. 24th St., Cleveland.

PATTERSON, J. BRYAN (M) engineer, Firestone Tire & Rubber Co., Akron, O. (mail) 124 Sage Ave.

SODERBERG, GEORGE G. (M) president, Columbia Axle Co., 850 E. 72nd St., Cleveland.

## Dayton Section

SNOOK, RAYMOND W. (M) body engineer, Superior Body Co., Lima, O. (mail) 743 Ewing Ave.

## Detroit Section

BRANDT, E. FRED (M) assistant superintendent, machine shop, Hudson Motor Car Co., 12601 E. Jefferson Ave., Detroit (mail) 215 Chalmers Ave.

COLLET, L. G. (J) member, Engine Tests Dept., General Motors Proving Ground, Milford, Mich.

HICKS, RICHARD V. (J) test engineer, Chevrolet Motor Co., Engrg. Lab., 2117 Holbrook Ave., Detroit (mail) 1189 Lakewood Blvd.

HILL, HARRY O. (M) sales engineer, American Bosch Corp., Detroit (mail) 17372 Rose-lawn Ave.

MITCHELL, ROBERT R. (M) standards engineer, General Motors Corp., 14-254 General Motors Bldg., Detroit.

QUALMAN, JACK W. (J) draftsman, Chevrolet Motor Co., General Motors Bldg. Annex, Detroit (mail) 8218 Poe St., Apt. 9.

TUTTLE, STANLEY B. (M) project engineer, Detroit Diesel Engine Div., General Motors Corp., Plymouth & Outer Drive, Detroit (mail) 12678 Strathmoor.

WILLIAMS, CHARLES W. (J) student engineer, Chrysler Corp., 12800 Oakland Ave., Detroit (mail) 1750 Iroquois Ave.

ZEEB, ELMER G. (M) chief draftsman, radiator design, Chrysler Corp., Oakland Ave., Highland Park, Mich. (mail) 1747 Severn Road, Grosse Pointe Woods, Mich.

## Indiana Section

NOBLITT, Q. G. (M) president, Noblitt-Sparks Industries, Inc., Columbus, Ind.

REEVES, PAUL B. (A) vice-president, Reeves Pulley Co., Columbus, Ind.

## Metropolitan Section

BOCK, EUGENE (A) president, Bock-David, Inc., 35-11 Farrington St., Flushing, L. I., N. Y. (mail) 3505 Parsons Blvd.

DOBBINS, RALPH W. (J) proprietor, Aviation & Automotive Services, 90 Pine St., Verona, N. J.

HERL, RUPERT (A) automotive mechanic, Fogarty Bros., 168th Place & Liberty Ave., Jamaica, L. I., N. Y. (mail) 9002 207th St., Bellaire, L. I., N. Y.

SCHNEITZER, LEE (M) diesel engineer, Ebasco Services, Inc., 2 Rector St., New York.

SEEGER, WILLIAM H. (A) proprietor, William H. Seeger's General Motor Service, 73 Pennsylvania Ave., Brooklyn, N. Y.

WHITMAN, EDWIN W. (A) superintendent, machine shop, Houper Machine Corp., 12-12 44th Ave., L. I. City, N. Y.

## New England Section

CRANE, BRUCE (J) junior engineer, Ethyl Gasoline Corp., 20 Providence St., Boston.

## Northern California Section

ANDERSON, A. FRED (A) chief engineer, National Motor Bearing Co., 1100-78th Ave., Oakland, Calif. (mail) 2564 Havenscourt Blvd.

BRITTEN, CLYDE H. (M) assistant manager, T. A. Dept., Shell Oil Co., 100 Bush St., San Francisco (mail) P. O. Box 711, Martinez, Calif.

## Northwest Section

CZARNIECKI, JOHN (J) engineer, Kenworth Motor Truck Corp., Seattle, Wash. (mail) 2027 13th Ave., S.

FITCH, JAMES WM. (J) engineer, Kenworth Motor Truck Corp., Seattle, Wash. (mail) 1027 Bellevue Court.

LOUDEN, VERGIL W. (A) shop foreman, Pacific Highway Transport, Seattle, Wash. (mail) Box 64, Richmond Highlands, Wash.

(Continued on next page)

# SAE Coming EVENTS

World Automotive  
Engineering Congress  
May 22-June 8

National Tractor Meeting

Sept. 28-29

Schroeder Hotel

Milwaukee, Wis.

National Aircraft Production Meeting

Oct. 5-7

Ambassador Hotel

Los Angeles

Annual Dinner

Oct. 16

Hotel Pennsylvania

New York City

Southern California - June 14

The Breakfast Club, 3201 Los Feliz Blvd., Los Angeles, Calif. The Government's Responsibility

for Aviation Research - E. P. Warner, member of Civil Aeronautics Authority.

Milwaukee - June 9



**Oregon Section**

HERRMANN, EDWARD T. (A) service manager, Olsen Francis Co., Portland, Ore. (mail) 2823 N. E. 59th Ave.

**Philadelphia Section**

HUHN, GEORGE ALBERT, 3RD (A) automotive engineer, Sun Oil Co., 1608 Walnut St., Philadelphia.

MENDICK, PHILIP (A) sheet metal mechanic, Naval Aircraft Factory, Philadelphia (mail) 5201 W. Berks St.

**St. Louis Section**

BERRY, DAVID L. (J) junior mechanical engineer, Shell Oil Co., Inc., Wood River, Ill. (mail) 104 Aberdeen Place, Clayton, Mo.

GRIFFITH, LEROY W. (J) junior mechanical engineer, Research Dept., Shell Oil Co., Inc., Refinery, Wood River, Ill. (mail) 744 Wood River Ave.

**Outside of Section Territory**

BRYAN, O. L. (M) detailing geophysical trucks, Stanolind Oil & Gas Co., Tulsa, Okla. (mail) 6151 Goliad St., Dallas, Tex.

**Foreign**

HAYES, THOMAS (A) managing director, Hayes Bros., Ltd., 17 Davis St., Limerick, Ireland (mail) "Sunville," O'Connell Ave.

SPRINGFIELD, JAMES BRANYON (A) Delville Court, Webber Rd. & Galway St., Germiston, Transvaal, Union of South Africa.

VON MATERN, NILS (F M) director, Statens Vaginstitut, Stockholm 19, Sweden.

WELLWORTHY PISTON RINGS, LTD. (Aff.) Stan-ford Rd., Lymington, Hampshire, England. Rep: Howlett, John Wm., chairman and managing director, Radial Works.

WHITTA, CECIL VIVIAN (A) Paine Bros. (Motors) Ltd., P. O. Box 1, Otahuhu, Auckland S. E. 7, New Zealand.

HILLER, EARL HAMILTON, mechanical salesman, Standard Oil Co., Sacramento, Calif.

**Northwest Section**

COURTRIGHT, DON, figuring costs on new trucks, Kenworth Motor Truck Co., Seattle, Wash.

**Philadelphia Section**

BRAY, LENNOX JEROME, general foreman, Bethlehem Steel Co., Bethlehem, Pa.

**St. Louis Section**

DUNNING, EDWARD, automotive engineer, Shell Oil Co., Inc., St. Louis, Mo.

MINER, JOHN A., engineer in charge research and special development, Allis-Chalmers Mfg. Co., Springfield, Ill.

PARKS, OLIVER L., president and founder, Parks Air College, Inc., East St. Louis, Ill.

STROUP, FREDERICK HOWARD, air brake engineer, Wagner Electric Corp., St. Louis, Mo.

**Southern California Section**

JIRSA, LARMON LEO, power plant installation engineer, Vultee Aircraft, Downey, Calif.

LITTELL, L. B., instructor, Frank Wiggins Trade School, Los Angeles.

WEISER, S. K., automotive instructor, General Petroleum Corp., Los Angeles.

**Southern New England Section**

SANBORN, JOHN B., executive engineer, United Aircraft Corp., East Hartford, Conn.

**Outside of Section Territory**

CHRISTIAN, A. E., service manager, Breen Motor Co. Ltd., Norwood, Man., Canada.

HEILMAN, GRAYSON T., wholesale truckman, International Harvester Co., Denver, Colo.

JOHNSON, J. E., vice-president and general manager, Muskegon Piston Ring Co., Muskegon, Mich.

LIPETZ, ALPHONSE I., chief consulting engineer in charge research, American Locomotive Co., Schenectady, N. Y.

LEHMAN, J. E., JR., proprietor, Lehman Auto Service, Newark, Ohio.

SPENCE, WILLIAM H., technical director, Sealed Power Corp., Muskegon, Mich.

**Foreign**

ANDERSON, KARL VOLMAR, chief designer, A-B Bolinder & Munktel, Eskilstuna, Sweden.

BUCHI, ALFRED J., president, Buchi Syndicate, Winterthur, Switzerland.

FOLKES, JOHN HERBERT, director, John Folkers (Lyc Forge), Ltd., Stourbridge, Worcestershire, England.

GALLAY, LTD., Vulcan Works, London, N. W. 2, England.

HASSAN, WALTER THOMAS FREDERICK, experimental engineer, S. S. Cars Ltd., Coventry, England.

HELLIER, HENRY GEORGE, automotive engineer, United British Oilfields of Trinidad, Ltd., Trinidad, B. W. I.

JERVIS, THOMAS JOHN, mechanical engineer, Isotta Fraschini, Milan, Italy.

NIXON, FRANK, technical engineer, Bristol Aeroplane Co. Ltd., Bristol, England.

RIES, NICOLAS, works manager, Accumulateurs Tudor, Brussels, Belgium.

WEAVER, ALLAN NEIL, garage superintendent, Whangarei Engineering Co. Ltd., Whangarei, New Zealand.

TURNER, FRANCIS HENRY, fuel injection engineer, Wooff & Salvesen Ltd., Christchurch, New Zealand.

ZUMSTEG, ERNEST JOSEPH, service manager, General Motors Java, Tg. Priok, Java, N. E. I.

# Applications Received

The applications for membership received between April 15, 1939, and May 15, 1939, are listed herewith. The members of the Society are urged to send any pertinent information with regard to those listed which the Council should have for consideration prior to their election. It is requested that such communications from members be sent promptly.

**Buffalo Section**

SHAUGHNESSY, O. WILLIAM, automotive engineer, Socony-Vacuum Oil Co., Inc., Buffalo.

**Chicago Section**

GOODBODY, HARRY R., factory service representative, Studebaker Corp., South Bend, Ind.

LANGDON, TRACY B., vice-president, D. A. Stuart Oil Co., Chicago.

OLSON, C. R., vice-president and general manager, Keeshin Freight Lines, Inc., Chicago.

ROBERTSON, I. W., chief engineer, Dryden Rubber Co., Chicago.

WESTBERG, V. L., chief engineer, Sun Mfg. Co., Chicago.

**Cleveland Section**

HANSMAN, GEORGE A., sales engineer and assistant to general manager, Speed Nut Division, Tinneman Stove & Range Co., Cleveland.

KERR, ROBERT E., research engineer, Hoover Co., North Canton, Ohio.

MCCONKEY, RICHARD K., sales engineer, Timken Roller Bearing Co., Canton, Ohio.

ROCHE, PAUL C., sales engineer, Firestone Tire & Rubber Co., Akron, Ohio.

**Detroit Section**

ANDERSON, EDWIN W., sales engineer, Wolverine Fabricating & Mfg. Co., Detroit.

ERDOFY, M. E., vice-president in charge sales, Detroit Paper Products Corp., Detroit.

JENNINGS, FREDERICK A., student engineer, Chrysler Corp., Detroit.

MCCORTNEY, WILLETT J., engineer in charge rubber plastics, Chrysler Corp., Detroit.

NOVARA, JOSEPH, JR., furnace operator, Ford Motor Co., Dearborn, Mich.

PETSCH, EDWARD F., sales engineer, Timken-Detroit Axle Co., Detroit.

RALSTON, JAMES V., field engineer, Bendix-Westinghouse Automotive Air Brake Co., Detroit.

WHITE, BERNARD CHESTER, draftsman, General Motors Truck & Coach, Pontiac, Mich.

**Indiana Section**

MOORE, GEORGE T., research engineer, Standard Oil Co. (Ind.), Whiting, Ind.

SCHACHT, GEORGE W., time study and production, Auburn Auto Co., Connersville, Ind.

**Kansas City Section**

McKENDRY, HARRY, garage foreman, Missouri State Highway Department, Kansas City, Mo.

MECKLENBURG, L. P., service department, Ford Motor Co., Kansas City, Mo.

**Metropolitan Section**

APJOHN, THOMAS L., chemical mechanical engineer, Socony-Vacuum Oil Co., Inc., Brooklyn, N. Y.

BERESLAVSKY, EUPHIME V., consulting engineer, 91 Wall St., New York.

CHURCH, FRANCIS G., technical supervisor, National Carbon Co., New York.

KINSEY, ROBERT SHERWOOD, experimental tester, Wright Aeronautical Corp., Paterson, N. J.

LELAND, HOLLIS LITTLEFIELD, research engineer, Standard Oil Development Co., Elizabeth, N. J.

MARTIN, J. G., director of motor clinics, Ethyl Gasoline Corp., New York.

MILLER, EDWIN F., automotive engineer, Socony-Vacuum Oil Co., Inc., Brooklyn, N. Y.

MURRAY, MAX DAVIS, experimental tester, Wright Aeronautical Corp., Paterson, N. J.

RATHER, JAMES B., JR., assistant supervisor, Socony-Vacuum Oil Co., Brooklyn, N. Y.

YAMADA, TAIYU, representative, Sumitomo Metal Industries, Ltd., New York.

**New England Section**

ELIOT, SAMUEL, president, Cage, Inc., Boston, Mass.

HALL, ADAM D., lubricating engineer, The Alden Spare's Sons Co., Cambridge, Mass.

HATCH, GEORGE FRANCIS, student, U. S. Diesel Engineering School, Boston, Mass.

**Northern California Section**

DURHAM, GEOFFREY A., automotive engineer, Shell Oil Co., Inc., San Francisco.

## News of the Society

(Concluded from page 16)

strokes, particularly as in controlling wheel hop, shock absorbers are needed to attain the standard of ride expected by the buying public in this country," he declared.

He also presented methods of calculating angular deformation and supplied considerable data on creep, hysteresis, Durometer hardness and stress-strain relationships.

The diesel engine discussion at the Detroit Section April 10 meeting by F. G. Shoemaker, chief engineer of the Detroit Diesel Engine Division of General Motors Corp., and O. D. Treiber, chief engineer, Diesel Division of Hercules Motors Corp., brought a good turn-out of local SAE members and ten members from outside Detroit. Among the guests at the meeting was SAE President W. J. Davidson, General Motors Corp.

A series of slides accompanying Mr. Shoemaker's talk clearly illustrated the designing technique which makes it possible for a group of basic parts to be assembled into a complete series of engines to meet various needs in the transportation field and for power-generating applications. Mr. Treiber discussed the worldwide application of the diesel engine in transportation with particular reference to service requirements.

Those who failed to attend this closed meeting missed two papers on an up-to-the-minute subject and the lively discussion which followed.

## Refrigeration Engineer Invented Diesel Engine

● Washington

Diesel engines are the evolution of an idea which was first worked out by a refrigeration engineer, the Washington Section learned from Harte Cooke, diesel engine division, American Locomotive Co., at its May 9 meeting. They also saw many slides depicting the evolution of the diesel engine.

The refrigeration engineer, Mr. Cooke said, was Dr. Rudolph Diesel. While in Paris as a representative of Dr. Linde, father of modern refrigeration, Dr. Diesel conceived the diesel engine, and later worked the idea out on paper and wrote and published a book on it, the speaker recounted. Mr. Cooke then told how the inventor induced the Krupp munitions makers to undertake building the engine, and of the failures before a successful engine was built.

Regarding fuel for diesel engines, Mr. Cooke explained that while basically they can burn anything from coal dust to gasoline, fuels vary widely in their ability to operate satisfactorily. He added that lubrication was considered a major problem in the early stages of diesel development, due to the belief that temperatures high enough to ignite any fuel injected would burn the lubricant off the cylinder walls. This, he said, is not the case and lubrication has never given any real difficulties.

Mr. Cooke said a good word for supercharging, noting that 5 lb of supercharging will give an increase in power of from 50 to 60%. Part of this, he explained, is due to the fact that about one-third more air is forced into the cylinder. He added that this is accomplished by blowing out the residue exhaust gases usually left and by blowing some excess air through the cylinder, which helps to keep it cooler. There also is an increase in the mechanical efficiency due to a reduction in the percentage of mechanical losses, he said.

Diesel engines for trucks were in general use in Europe before they gained much headway in America due to the high costs of gasoline, Mr. Cooke stated. Here, he said, they met with stern opposition when they first were introduced for vehicles. One truck company, he stated, even refused to sell a chassis minus its engine so that a diesel engine could be installed. However, he reported, other companies pioneered, and resistance has been practically overcome, and diesel-powered trucks are widely used in certain types of service. Due to the difference in torque curves between the diesel and gasoline engine, a 10-ton diesel truck in hilly country has made round trips in 25 hr which gasoline-engine-equipped trucks took 36 hr to make, he reported.

## Oil Men Anticipate New Car Requirements

● New England

"Magic by the Gallon," the topic of a talk by George H. Freyermuth before the May 9 meeting of the New England Section, was heard by almost 100 members and guests.

Mr. Freyermuth, who is assistant manager, sales engineering department, Standard Oil Co. of N. J., gave many examples of the strides made by the oil industry in recent years in producing better gasolines and lubricants to meet the requirements of modern engines and to better their performance.

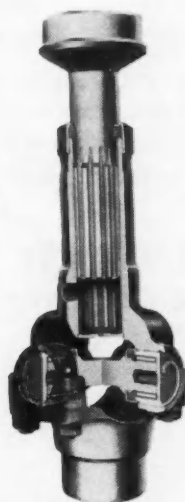
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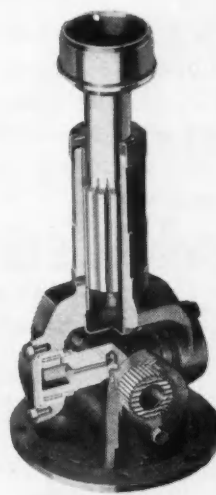
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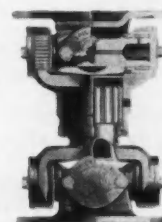
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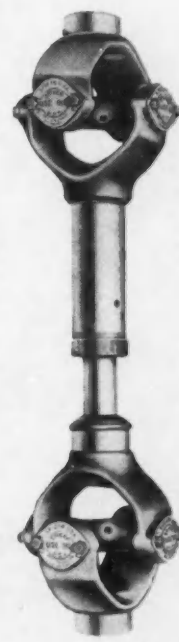
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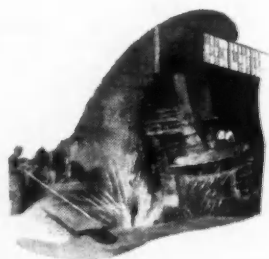
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